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Singapore's 'batman' receives top science award for research in Sars and Covid-19



Professor Wang Linfa is a faculty member at Duke-NUS Medical School's emerging infectious diseases programme. ST PHOTO: LIM YAOHUI



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SINGAPORE - A "batman" who helped trace the severe acute respiratory syndrome (Sars) back to bats and is now involved in the Covid-19 fight has bagged the President's Science Award.

Professor Wang Linfa, a top zoonotic disease expert who studies bat-borne diseases, is a faculty member at Duke-NUS Medical School's emerging infectious diseases programme.

The award is part of the annual President's Science and Technology Awards (PSTA) given to scientists whose work has led to significant scientific, technological or economic benefits for the country.

The other awards under the PSTA are the President's Science and Technology Medal - the nation's top scientific honour - and the President's Technology Award.

Five researchers received this year's PSTA that were given out on Friday (Dec 10) at the Istana.

Soon after the 2003 Sars outbreak, Prof Wang, 61, led an international team of experts who traced the Sars-CoV-1 virus that caused the disease to bats.

For a couple of decades now, Prof Wang has been figuring out how the elusive winged mammals can carry a pool of deadly viruses without falling ill.

Two patents and a new class of anti-inflammatory drugs that is under development have emerged from his work that unravelled the unique immune responses of bats.

"I hope the award will further highlight the importance of basic research in viruses and bats in combating current and future pandemics," said Prof Wang, who received the accolade from President Halimah Yacob at the Istana.

In the areas of Covid-19 research, Prof Wang and his team developed a test kit last year that detects whether someone has antibodies which neutralise the coronavirus.

The cPass test kit can also be used to see if vaccines work, check what proportion of the population has been infected, help with contact tracing and detect infections in animals.

The test was the first of its kind to receive authorisation from the United States Food and Drug Administration in November last year. It has since been made more versatile to measure neutralising antibodies against different variants such as Delta, and other related coronaviruses.

Prof Wang added: "We are working very hard on a cPass specific for Omicron (or oPass) as the current cPass is unlikely to be able to measure Omicron-specific neutralising antibodies accurately enough. We are hopeful to have the data in a few weeks."

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A few months ago, he and his team found that people who both recovered from Sars in 2003 and received the Pfizer-BioNTech vaccine were able to produce antibodies to neutralise all known Covid-19 variants.

Tapping this finding, the Duke-NUS team is developing a booster jab that protects against future variants of Covid-19 and other coronaviruses.

The Straits Times previously reported that the jab has been tested on mice and shown to be effective so far, and the team plans to start human trials.

"We are working with multiple potential industrial partners to further develop this vaccine, termed as a third generation vaccine or 3GCoVax."



(From left) President's Science Award recipient, Professor Wang Linfa; President's Science and Technology Medal recipient and SingHealth group CEO Ivy Ng; President's Science Award recipient, Professor Chen Xiaodong; and President's Technology Award recipient, Associate Professor Too Heng-Phon. ST PHOTO: KEVIN LIM

The President's Technology Award went to a life sciences expert who pioneered non-invasive cancer detection methods so that patients with gastric cancer can be diagnosed early.

For more than a decade, Associate Professor Too Heng-Phon, 62, developed ways to identify cancer and other diseases by drawing on the smallest pieces of genetic material - called microRNA - as biomarkers.

His microRNA detection technology was later licensed by a biotech company called MiRXES, which he co-founded, to develop a blood test kit that can accurately detect gastric cancer in its early stages.

The first-of-its-kind test was a game changer since gastric cancer is usually diagnosed at later stages and detected through endoscopy - an invasive procedure that involves inserting a tube with a camera through the mouth and into the stomach.

"More than 10,000 patients have been tested with Gastroclear (the test kit) in hospitals and clinics in Singapore, neighbouring South-east Asian countries and China. This is despite lower uptake of cancer screening tests due to the pandemic," said Prof Too, who is also a faculty member at the National University of Singapore's (NUS) Yong Loo Lin School of Medicine.

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A similar lung cancer test kit will be rolled out in Japan next year, while similar tests for liver and breast cancers are in their development stages, he added.

It was previously reported that Prof Too's involvement in the biomedical sciences in Singapore started when he educated political leaders about the life sciences at NUS. That was in 2000, at the onset of the nation's life sciences push.

Prof Too has been lauded as a good teacher and mentor to his students, encouraging them to expand their research into "impactful outcomes for society".

He said: "I am like a fellow traveller alongside my students, sharing moments of frustrations, anxieties and joy. Being on the ground with them and not just 'talk the talk' but 'walk the walk', has inspired some to do likewise."

Some of his former students in his laboratory helped to set up MiRXES.



MiRXES' Gastroclear can accurately detect gastric cancer in its early stages. PHOTO: LIANHE ZAOLIAO

With the company's expertise in diagnostics, MiRXES swivelled to the Covid-19 research space to manufacture Singapore's first polymerase chain reaction test kit early last year. Called Fortitude, it has since been used here and sent to more than 40 countries.

The other President's Science Award recipient is Professor Chen Xiaodong, 46, from Nanyang Technological University's (NTU) School of Materials Science and Engineering, for his foray into flexible electronics.

He recently created the world's first plant-based robot, a venus flytrap which is powered by electrical signals to pick up a thin wire. This could pave the way for the creation of robot grippers that use plants to pick up fragile and delicate objects.

The President's Science and Technology Medal went to SingHealth group chief executive officer Ivy Ng, 63, and Professor Sir Peter Gluckman, 72, chief scientific officer at the Agency for Science, Technology and Research's (A*Star) Singapore Institute for Clinical Sciences.

Three Young Scientist Awards (YSA) were given out by Deputy Prime Minister Heng Swee Keat at the event.



(From left) Young Scientist Awards recipients Dr Zhang Hanwang, Dr Yvonne Gao and Dr Sarah Luo. ST PHOTO: KEVIN LIM

The awardees are: A*Star's Dr Sarah Luo, 35, for her research into brain and metabolic diseases; NUS' Dr Yvonne Gao, 33, for her work towards developing quantum computers; and NTU's Dr Zhang Hanwang, 34, for his research into next-generation artificial intelligence.

Congratulating the eight PSTA and YSA recipients, Mr Heng noted that the nation is doubling down on science and technology to better address future complex challenges such as more severe pandemics and climate change.

"But our research and development efforts are more than just research grants. Ultimately, at the heart of our R&D efforts are the research scientists and engineers whose curiosity and ingenuity drive new discoveries and breakthroughs," added Mr Heng who is also chairman of the National Research Foundation.

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